

length. An abiding impression of this catalogue is the remarkably insensitive aesthetics of many beach protection schemes – particularly when there is no sign of the beach that they were designed to preserve. The volume concludes with a discussion of littoral hazards, pollution and conflict resolution in the beach environment.

The approach is strongly morphological – beach compartments, beach planform and beach profiles all feature strongly – and models (both hardware and mathematical) merit less than a page and no follow-up references for the interested reader. The linkage of the beach morphodynamics literature with descriptions of different beach profiles could have been more tightly organized, and a basic figure of fully reflective, fully dissipative and intermediate beach states is badly needed. Bird does raise a useful discussion on the validity and utility of the concept of the ‘equilibrium beach’ but the opportunity to move on to discuss non-equilibrium ideas is missed. And when it comes to shoreline change, the

applicability (or otherwise) of the ‘Bruun Rule’ to understanding beach response to sea-level rise really doesn’t do justice to this particular debate and its spin-offs.

Beach Management is most successful when weaving together case studies into a coherent narrative. At its worst, the case studies are merely descriptive rather than evaluative but some of the more detailed examples, such as those of Port Phillip Bay in southeastern Australia, do give a good insight into the challenges and complexities of coastal consultancy. These useful detailed examples will make the book attractive to researchers, students and planners concerned with managing the boundary between land and sea.

T. SPENCER

*Cambridge Coastal Research Unit
Department of Geography
University of Cambridge*

ENVIRONMENTAL CHANGE: THE EVOLVING ECOSPHERE edited by Richard John Huggett, Routledge, London, 1997. No. of pages: xx+378. Price: £16.99 (pb). ISBN 0-415-14521-X.

The content of *Environmental Change* is far more original than its title. It is also a book of breath-taking range, both in terms of the temporal scale it covers and the phenomena it considers. Essentially, however, it is not about future global change, even though the publisher’s blurb suggests it may be. It is about the history of the world since its origin. It is well written, well illustrated and well referenced, and undergraduates would find it immensely informative. Unfortunately I suspect that the sheer width of the book, the fact that it does not restrict itself merely to the Quaternary Era, and its relative lack of concern with the fashionable future, may mean that it does not attract the readership it deserves.

The first chapter looks at the evidence for environmental change and how change is dated. Chapter two describes the nature of the Cosmos. The rest of the chapters then follow what Huggett describes as ‘a rigid and unconventional structure’ with each one consisting of five sections that in sequence are: the setting down of the basic material about the

structure and composition of a particular ‘sphere’; a description of the nature of change in that ‘sphere’; the causes of change, focusing on external and internal causes; the rate of change; and the directional aspects to change – cycles, steady states and trends. The ‘spheres’ that make up the chapters are the geological environment, atmosphere, hydrosphere, pedosphere, toposphere, and biosphere and ecosphere.

The structure can be frustrating. For example sea-level changes are treated in the hydrosphere chapter, but they occur as three separated chunks in the last three sections of the chapter, where they are interspersed with discussion of other types of hydrospheric change (e.g. lake-level changes and flood and drought cycles).

Plainly there is a considerable amount of subject matter that will be of direct concern to the geomorphologist, though there are few themes that are developed at any length. Nonetheless there are flashes of informative geomorphological originality, including the airing of the possibility that impact-induced superwaves could have moulded tracts of the British landscape, of which the lowly Bournemouth Chines are one example.

A. S. GOUDIE

*School of Geography
University of Oxford*

ENVIRONMENTAL GEOLOGY: GEOLOGY AND THE HUMAN ENVIRONMENT by Matthew R. Bennett and Peter Doyle, John Wiley & Sons Ltd, Chichester, 1997. No. of pages: 501. Price: £18.99 (pb). ISBN 0-471-97459-5.

Research and teaching activity in environmental geology is continuing to grow rapidly. This ‘new’ discipline was

formulated 30 years ago in North America, has swept through Europe in the past decade, and is expanding now in the rest of the world. Its dual driving forces are, superficially, student attraction to the ‘environmental’ tag as a byword for relevant science and, more fundamentally, society’s urgent need to understand the geological components of environmental problems.

Bennett and Doyle’s book is therefore aimed at an

expanding market, particularly because it is written from a European perspective – North American readers are already well served by a bookshelf full of generally informative and attractive volumes. The new text lacks the glossy, heavily designed style of many of its American competitors, but is nevertheless reliably written and clearly illustrated.

An introductory chapter leads to five chapters on geological resources. The last of these deals explicitly with aesthetic and scientific resources, a component of environmental geology which is often not given its full prominence. Two chapters follow on engineering geology, including an innovative coverage of engineering in extreme environments, exemplified by periglacial areas and subtropical deserts. One chapter is devoted to waste and pollution management. This might seem a brief coverage were it not that some of the impacts of resource extraction are dealt with in earlier chapters. The final three core chapters are on geological hazards. The book is therefore a well balanced treatment of the environmental geology field. The text is enlivened by frequent topic boxes, mainly describing specific case studies.

Only the final chapter gave me cause for concern. Entitled 'Environmental Geology: an urban concept', its thesis is that, with half the world's population living in cities by the end of the century, the main focus of environmental geology will be increasingly urban. I appreciate the thrust of this argument, but fear it risks being misunderstood. As Bennett and Doyle themselves recognize in Chapter 1, urban activity and growth are fuelled from a wider hinterland, much of it rural and some of it global. Too much emphasis on urban problems may divert attention from these more remote but equally serious impacts.

This matter of emphasis does not detract from the utility of Bennett and Doyle's book. It provides a reliable grounding for undergraduate modules on environmental geology at an affordable price.

NIGEL WOODCOCK
Department of Earth Sciences
University of Cambridge

PALEOALTERITES AND PALEOSOLS by Robert Mayer, A.A. Balkema Uitgevers BV, Rotterdam, 1997. No. of pages: vi+151. Price: Hfl 150.00 (hb). ISBN 90 5410 724 3.

This book is a slightly updated English translation of a 1987 French publication which claims to be directed at geologists with little training in, or familiarity with, pedology and weathering. With this in mind, the lack of a *clear* differentiation between 'palaeosol' and 'palaeoalterite' at the outset is somewhat surprising. The book is divided into eight chapters, the last being a glossary of terms primarily derived from the classic and somewhat dated texts of Duchaufour and Brewer. Overall, it is rather unbalanced, with 81 pages devoted to 'examples of paleoalterites and paleosols', a chapter which considers a range of phenomena from root traces in palaeosols to calcretes, laterites, palaeosols on volcanic rocks, Precambrian alterites and palaeoalterites on Hercynian Basement. Each section of this chapter follows a similar structure with examples of their occurrence in various parts of the world, largely but not exclusively derived from French literature, followed by some consideration of their interpretation and significance. As a palaeopedologist, I find it difficult to assess its intended value as a text for geologists, particularly in view of the lack of reference to considerable amounts of Quaternary palaeopedological literature. Despite these reservations, however, I was impressed by some of the discussion on diagenesis and deep weathering, topics with which most pedologists and palaeopedologists need to

become more familiar. The remaining chapters considering the tectono-sedimentary context of palaeoalterites and palaeosols, (namely the tectonic, topographical, geochemical and sedimentary factors affecting their formation and preservation), methods of study and their palaeoclimatic, stratigraphic and palaeogeographic significance are somewhat disappointing, being too brief and over-ambitious. Overall, I find it difficult to make a very strong recommendation for this book. Whilst acknowledging the attempt to focus on a particular readership and to provide an introduction rather than a comprehensive outline, I feel that 'non-pedological' geologists might be better served consulting other, more rounded palaeopedological texts, e.g. Catt (1986) or Retallack (1990).

REFERENCES

- Catt, J. A. 1986. *Soils and Quaternary Geology: a Handbook for Field Scientists*, Clarendon Press, Oxford.
Retallack, G. J. 1990. *Soils of the Past: an Introduction to Paleopedology*, Unwin Hyman, Boston.

ROB A. KEMP
Department of Geography
Royal Holloway
University of London

GEOMORPHOLOGICAL HAZARDS OF EUROPE by C. Embleton and C. E. Embleton-Hamman, Elsevier,

Amsterdam, 1997. No. of pages: x+524. Price: \$240.75 (hb). ISBN 0-444-88824-1.